

WHAT IS CLAIMED IS:

1. A base isolation device for a structure that suppresses vibration in the out-of-plane direction of a structural member of the structure and comprising:

a tension member is located between support points, which are located on said structural member and separated by a specified space, and has an overall length that is longer than the space between these support points, and where first link pieces are connected directly to or by way of a rigid member to points along said tension member such that they can rotate freely, second link pieces are connected to said structural member such that they can rotate freely, and where the other ends of these first link pieces and the other ends of the second link pieces are connected such that they can rotate freely;

an energizing member located between the structural member of the structure and the connection between the first link pieces and second link pieces, and that by energizing these first link pieces and second link pieces, applies tension to said tension member; and

a damping member that is operated by the rotation of said first link pieces and second link pieces.

2. The base isolation device for a structure of claim 1 wherein mass is added at the connections between said first link pieces and said second link pieces.

3. The base isolation device for a structure of claim 1 or claim 2 wherein said tension member is constructed using rope.

4. The base isolation device for a structure of claims 1 or claim 2 wherein said tension member is constructed using a plurality of steel rods that are connected to each other such that they can rotate freely.

5. The base isolation device for a structure of any one of the claims 1 to 4 wherein sets of said first link pieces and second link pieces are located at two locations separated by a space in the direction of length of said tension member, and said energizing member and damping member are located in the space between said first link pieces or second link pieces of each of these sets.

6. The base isolation device for a structure of any one of the claims 1 to 5 wherein said damping member is an oil damper.

7. The base isolation device for a structure of any one of the claims 1 to 6 wherein said damping member is an active damper, and together with locating a sensor for detecting shaking on said structural member, a controller is installed that adjusts the operation of said active damper based on the detection signal from the sensor.

8. The base isolation device for a structure of claim 7 wherein said sensor is an acceleration sensor.

9. The base isolation device for a structure of claim 7 wherein said sensor is a displacement sensor.

10. The base isolation device for a structure of claim 7 wherein said sensor is a

velocity sensor.

11. The base isolation device for a structure of any one of the claims 1 to 5 wherein said damping member is a viscoelastic member or elasto-plastic member.

Abstract:

A base isolation device for a structure capable of efficiently and effectively suppressing the vibration of a structural body in surface outside direction, wherein a tension member 14 having an overall length longer than an interval between support points 13 provided on the structural body 12 at a specified interval is disposed between the support points, one end parts of first link pieces 15 are rotatably connected midway to the tension member directly or through rigid members, one end parts of second link pieces 16 are rotatably connected to the structural body, the other end parts of the first link pieces are rotatably connected to the other end parts of the second link pieces, and an energizing member 17 providing a tension to the tension member by energizing the first link piece and the second link piece and a damping member 18 operated by the rotation of the first link piece and the second link piece are installed between the structural body forming the structure and connection parts 21 between the first link pieces and the second link pieces.